

U.S. Department
of Transportation
United States
Coast Guard



Memorandum

99 JAN 21 AM 9:35

DOCKET SECTION

50181

USCG-99-474-4

SUBJECT: STRAIT OF JUAN DE FUCA WAMS (13004)

Date:

16503

Reply to

24 Oct 95

Attn of: LTJG Runnels

From: (warns)

To: (oan)

Via: Plans/Programs

Ref: (a) Aids to Navigation Manual - Administration (COMDTINST M16500.7), Chapter 3

1. Recommend the following action items be completed as per enclosed WAMS report and reference (a):

(a) Increase Buoy J's (LLNR 16135) intensity and decrease the flash characteristic to 2.03A and FL 6s respectively. These adjustments will improve the luminous range of this buoy from 3.42NM to 4.31NM. Solar calculations (encl 2) indicate that three additional batteries are needed to upgrade the buoy's intensity.

(b) Solar calculations indicate that LB R (LLNR 16340), LB S (LLNR 16345), and LB SA (LLNR 16405), after establishing RACONS on these aids, do not meet minimum battery capacity requirements. ATON ORDER 03/96 (encl 3) corrected these problems by upgrading solar panels.

(c) Calculations indicate that the intensity of Ediz Hook Light (LLNR 16280) cannot be increased; however, based on user input, recommend permanently relocating this light to be co-located with the Ediz Hook sound signal at the eastern tip of Ediz Hook (48-08-24.5N 123-24-08.0W). Light was temporarily relocated to the above position during the week of 20 Oct 95 (see Enlc 4).

A Vega VRB light will replace the current lantern (no set date), which will allow for a greater intensity if needed.

(d) Oan will cooperate with PSVTS and the Captain of the Port regarding feasibility of adjusting approaches to Rosario Strait to reflect actual vessel routing, establishing a no fishing zone around the Port Angeles pilot station, the possibility of relocating the Pilot Station, and better enforcement of the requirement that vessels communicate in English.

2. Recommend disapproval of the following items from the enclosed WAMS Report:

(a) Do not change the color of the TSS buoys for the following reasons:

1. The cost of repainting these buoys to achieve a marginal increase in daytime visibility is prohibitively high.
2. The Canadian CG is opposed to repainting these aids and has received few complaints regarding them.
3. Outstanding VTS monitoring and coverage.
4. Most TSS buoys have a RACON.
5. Majority of user input, including Puget Sound Pilots, indicated that these aids are satisfactory.

(b) Do not add additional ATON marking the shoal waters between Angeles Point and Ediz Hook, off Twin Rivers, and off Morse Creek. These aids would be "nice to have", primarily benefiting large vessels transiting the TSS. These vessels have outstanding navigational equipment, and they do not stray from the lanes without guidance from the VTS.

(c) Do not increase the intensity of Ediz Hook LB 2 (LLNR 16285). Only one user requested that this aid be more visible. In addition, upgrading the lamp size of this aid will not significantly increase the luminous range to warrant changes. Currently, this aid is in moderately protected waters and is not difficult to detect with radar; the radar range of this 8x26 buoy is 3.2NM. Also, the relocation of Ediz Hook Light will provide better ATON marking the entrance to Port Angeles.

(d) Do not build a structure in the vicinity of Hein Bank. The cost of establishing a structure that would withstand area conditions would be approximately \$100,000. The two aids marking Hein Bank provide adequate day and night visibility when used in conjunction with other local ATON.

(e) A RACON has recently been added to TLS LB RA (16370). No additional RACONS are needed. It was recommended that a RACON be established on Lawson Reef Bell buoy 2 (LLNR 19330). Only one user indicated that the buoy was difficult to see; no input from the 1992 WAMS was received regarding this aid. With the outstanding navigational equipment, the decrease in area fishing, and VTS guidance, a RACON is not needed.

3. Based on luminous range calculations and daytime range calculations (encl 1), a mariner aboard a vessel does not see at least two aids ahead (lit and unlit) on at least one side of the channel from any position in the waterway, 80% of the days and nights of the year. This does not meet the recommended standards in the ATON Tech Manual (pg 4-27).

Recommend that these standards be waived. Input from a majority of mariners indicate that the Strait of Juan De Fuca is adequately marked both day and night.

4. WAMS will forward copy of this waterway review to the Canadian Coast Guard.

5. There are no unfinished projects resulting from the FY-92 WAMS.

6. WAMS will retain this report in the waterway file and forward Executive Summary to G-NSR.


C. B. RUNNELS

Encl: (1) Luminous Ranges
(2) Solar Calculations
(3) ATON ORDER 03/96
(4) Ediz Hook
(5) Strait of Juan De Fuca WAMS (13004)

Copy w/o encl: (1) CGC MARIPOSA
(2) GP Port Angeles
(3) Puget Sound VTS

UNIT WAMS CHECKLIST

Unit Wams Officers must complete checklist and submit as cover to all WAMS.

1) TITLE OF WAMS:

STRAITS of JUAN de FUCA

2) DATE WAMS DUE:

01 June 1995

3) DATE WAMS SENT TO OAN:

4) Unit WAMS Officer and phone number:

LCDR DEMETRIFF (360) 457-2250

5) Sources of info on WAMS preparation:

- a. CCGDTHIRTEEN INST 16500.11D
- b. COMDTINST 16500.7, XTON Manual- Administration
- c. Appendix 35 to Annex C to CCGDTHIRTEEN SOP

6) Obtain copy of previous WAMS for subject waterway. JUNE 1991

If you don't have a copy, call CCGD13 (OAN) WAMS OFFICER for copy:

initial: DM

7) In addition to original WAMS to OAN, submit computer copy on disk or via E-Mail:

initial: DM

8) Action Summary describes all recommended changes in WAMS:

initial: DM

9) All changes to unit WAMS are marked in alternate ribbon:

initial: DM

10) Provide support for recommended changes and provide rationale for reflection of changes recommended by others. Cite applicable instructions, enclosures, phone calls, past accidents, environmental conditions, etc. as supporting documentation, thereby providing solid reasons in favor/against the desired changes. It is not practical to critique every recommendation made, however attention should be given to all suggestions that you feel need to be addressed.

initial: DM

11) If there are bridges in the area of review, include commentary on adequacy of bridge lighting, operation, and condition of pier protection or fendering. Include any operational difficulties noted and an accident history of the bridge.

initial: N/A

12) If you mail a waterway questionnaire to local users, address the following issues in your questionnaire as applicable: a. possible improvements to the area Vessel Traffic Service (VTS), b. adequacy of bridge lighting, operation and conditions, and c. problems resulting from vessel traffic congestion.

initial: DM

(OVER)

STRAIT OF JUAN DE FUCA
WAMS ANALYSIS
GROUP PORT ANGELES
DISTRICT IDENTIFICATION NUMBER 13004
CRITICAL WATERWAY
JUNE 1995

Next scheduled review: June 1998

Prepared by: G. A. DEMETRIF, LCDR, Group Port Angeles
L. J. LEE, LCDR, Group Port Angeles

Submitted by: C. R. BROWN, CAPT, Commander, Group Port Angeles

Reviewed by: G. F. GREENE, Chief, D13 Aids to Navigation Branch

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16500

MAY 3 1 1995

FIRST ENDORSEMENT by CAPT C. R. BROWN, Commander, Group Port
Angeles

Subj: STRAIT OF JUAN DE FUCA WAMS DATED JUNE 1995

1. I concur with all aspects of subject Study. All of the action items have credibility and should be accomplished.

2. I encourage action on the following items:

a. Increase the intensity of TSS Lighted Buoys. Many comments from users, both major and minor, have indicated that the current low intensity is a major problem.

b. Change the color of TSS Buoys. Long overdue. Recommendations made in the 1991 SJDF WAMS still apply. These aids are ineffective due to their poor visual conspicuousness.

c. Increase the size of and add Racons to critical buoys where practical. Again, comments from users, indicated that they use and rely on the Racons for navigation through the Strait.

3. Request that a study be conducted to determine if any changes need to be implemented on the location for pilot embarkation and disembarkation in the Port Angeles area of the Strait. On occasion, large laden vessels, deviate from the traffic lanes for pilot services, approach Ediz Hook dangerously close. If one of these vessels has an engineering casualty during this operation, a major marine disaster could become a reality.


C. R. BROWN

4. Action Summary.

a. Conduct a study to determine the validity of the recommendations to alter the Port Angeles pilot station, and if so, determine the best configuration and location for the pilot embarkation and disembarkation stations. Two detailed recommendations were received from frequent users.

b. Increase the intensity of Buoy 'J' light and racon.

c. Increase the intensity of the Ediz Hook lighted buoy #2. Users find the light difficult to see when upon approach.

d. Increase the intensity of or change the Ediz Hook light to a stand alone beacon and move it to the end of the Ediz Hook spit, if allowed by the Coast Guard Air Station operations.

e. Increase the intensity of all the TSS buoy lights.

f. Change the color of the Traffic Separation Scheme buoys from yellow (Special Marks) to red and white vertically striped (Safewater Marks). The present color make the buoys nearly invisible to the naked eye. The 1991 review of the Strait also made this recommendation and the issue apparently remains.

g. Mark the shoal waters with a beacon or articulated buoy between Angeles Point and Ediz Hook, off Twin Rivers, and off Morse Creek to give vessels a tool for parallel indexing, as well as to warn of impending shoal waters.

h. Add additional racons to the important turns in the Strait to assist the users in distinguishing the buoys when areas are congested by vessels either transiting or engaged in fishing. At a minimum, add racons to all the mid-channel buoys and Lawson Reef bell buoy #2.

i. Straighten the traffic separation scheme approaches to Rosario Strait as recommended by PSVTS and as the change would reflect the actual routes taken by vessels transiting that area.

j. Establish a "no fishing" zone around the Port Angeles pilot station area.

k. Provide a fixed aid in the vicinity of Hein Bank for reliable radar and visual fixes.

l. Establish enforceable regulations requiring foreign vessels to communicate in English, as recommended in the 1991 review.

5. Information Collection.

a. Narrative Description. The Strait of Juan de Fuca WAMS study conducted in 1988 gives a good description of the area.

Coast Pilot 7 provides a synopsis of the local weather trends and prevailing conditions. Low visibility, a frequent occurrence in the Strait, impacts safe navigation. Enclosure (1) lists all the aids that were reviewed by this WAMS.

A marine sanctuary exists along the Dungeness Spit to protect environmentally sensitive marine life from harm. There is also some consideration by NOAA to establish part or all of the Strait as a marine sanctuary.

The main anchorages used by deep-sea vessels include Port Angeles, Constance Bank, Victoria, and Esquimalt. Canada requires 24 hour advance notice prior to anchoring on Constance Bank.

b. Users. A wide range of vessels transit the Strait of Juan de Fuca (SJDF), encompassing virtually every form of marine transportation. It should be noted that tank vessels over 125,000 DWT may enter the SJDF, however, they may not proceed east of a line connecting Dungeness Light and Discovery Island Light. This permits super tankers to lighter in Port Angeles. Vessel cargo types remain virtually unlimited with the exception of LPG or LNG tankers, which are extremely rare. As of 17 November 1994, laden, single hull tank vessels of 5000 gross tons or more, operating east of a line connecting New Dungeness Light with Discovery Island Light, and all points north and south of these lights, must be escorted by at least two tug escort vessels, as per 33 CFR 168. Washington State Law (Revised Code of Washington 88.16.190 in Pilotage Act) requires tank vessels of 40,000 DWT or more and loaded with product have a tug escort when transiting east of the line described above, with the only exemption being specially constructed tankers with double hull bottoms, enough ship's horsepower to equal one horsepower to each 2.5 deadweight tons, twin screws, and two radars in working order. Below is a summary of estimated vessel movements over the past three years, as compiled by Puget Sound Vessel Traffic Service.

<u>Vessel Type</u>	<u>Transits</u>			
	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
Tanker	1574	1525	1442	1457
Freighter	9424	9518	8580	8048
Tug and Tow (est)	4200	2900	3200	2850
Government	889	770	580	373
Miscellaneous (est)	2150	2400	2300	1200

Many of the tug and tows use inshore routes when transiting the SJDF. Also, a large fishing fleet, home based in Seattle, transit the SJDF enroute to fishing grounds in Alaska or offshore the Washington/Oregon coast.

c. Public Comment. We solicited user comment, Enclosure (2) using various methods, Enclosure (3) including personal letters to major user groups, an article in the Local Notice to Mariners for several months, and a short request in local marine magazines. Comments received, Enclosures (4-6), are discussed throughout the report.

d. Casualty History. See Enclosure (7) for additional MSIS Analysis.

(1) MATSUKAZE. The grounding of the tanker MATSUKAZE in 1988 is the most significant marine casualty in the Strait in recent history. The grounding occurred near Crescent Bay in position 48-09.6N, 123-46.16W. The cause of the casualty was the mate on watch falling asleep and missing a charted turn in the TSS just north of Twin Rivers. More detailed investigations are on file in Marine Safety Office Puget Sound and PSVTS.

(2) On 15 August 1993, the pleasure craft LADY J, O.N. 906122, and the 40,000 gross ton tank ship NEPTUNE LIBRA, L87700412, collided in zero visibility in the outbound lanes of the TSS approximately 4.5nm west of buoy 'J' in the precautionary area surrounding that buoy. The apparent cause of the casualty was the failure of the LADY J operator to keep a proper lookout and to use his radar. The LADY J suffered severe cracks in her fiberglass hull and superstructure along the port side, but was able to proceed to Neah Bay without assistance. The NEPTUNE LIBRA suffered no damage.

e. Traffic Patterns. The Strait of Juan de Fuca holds an IMO approved Traffic Separation Scheme (TSS). U.S. and Canadian Vessel Traffic Services cooperatively manage this international strait. COLREG Rule 10 governs vessel behavior in the lanes. Passive participation is required for all VTS users which include: (1) power driven vessels of 20 meters or more in length, (2) vessels of 100 gross tons or more carrying one or more passengers for hire, and (3) dredges or floating plants. In addition, full participation is required for all VMRS user which include: (1) power driven vessels of 40 meters or more in length, while navigating, (2) commercial towing vessels of 8 meters or more in length, while navigating, and (3) vessels certified to carry 50 or more passengers for hire, when engaged in trade. Full participation requires vessels to make various reports to the VTS.

Many tug and tows and fishing vessels avoid the lanes, favoring inshore routes. By cooperative agreement, the U.S. and Canadian VTS's encourage this practice to keep the lanes clear for large commercial vessels using the TSS. This practice

minimizes crossing situations in the vicinity of Traffic Lane Separation Lighted Buoy 'J' by tugs conducting coastal trade or offshore dumping. An agreement between Seattle Traffic and Tofino Traffic prohibits vessels crossing within 10 miles east of buoy 'J'. The precautionary area surrounding buoy 'J' is considered by VTS Puget Sound to be one of the most difficult traffic management areas within their area of responsibility due to the risk of collision created by vessels crossing for or from the offshore lanes. However, the initiatives described above have greatly improved vessel predictability and have significantly reduced the risk of these vessel crossings.

An extensive commercial salmon fishery exists in the Strait, causing heavy congestion in the TSS Separation Zone between buoy 'J' and 'VF', and in the areas north and south of the lanes. The major openings occur during the summer months.

f. Charts/Survey. The 1988 WAMS section on charts and surveys is still applicable.

g. Aid Assignment List. The CGC MARIPOSA now services the aids that were previously serviced by the CGC FIR.

6. Public Comment Survey. The Group Port Angeles WAMS Team determined that it was not necessary to take any user rides through the Straits of Juan de Fuca because of the input received from users, both commercial and military. A shore side driveby and overflight was conducted by the WAMS Officer from Neah Bay to Port Townsend during the period of October 1994 to May 1995. All major shore side ATON installations were visited and inspected during that time.

a. Approach to the Port Angeles Pilot Station. Deep draft vessel operators expressed concern about the congestion in the vicinity of the pilot station and also the proximity of the station to shoal waters.

One tank master suggests: making the Ediz Hook buoy #2 articulated; moving the Ediz Hook light to the end of the spit and making it a stand alone beacon; marking the 5 fathom shoal line at the west end of Ediz Hook; having VTS actively keep a two to three mile window between vessels arriving at or departing from the pilot station; establishing a "no fishing" zone in the station area; moving the pilot station to approximately 2nm northeast of the spit to assist in alleviating traffic congestion then adjust the traffic lanes accordingly; and adding a buoy to mark the 5 fathom curve north of Morse Creek to help in monitoring the vessel's position on the west bound course toward the pilot station.

Another tank vessel master suggests: spacing the vessels approaching and leaving the pilot station; rearranging the pilot station by establishing a 1nm radius precautionary area 1nm northeast of the tip of Ediz Hook to be the pilot

boarding/disembarking area with a lighted Mo(A) buoy with racon papa (.-.-.) for 'pilot' in the middle; requiring eastbound traffic pass south of the buoy and westbound past north; slightly changing the TSS coming from buoy 'PA' by removing the inbound dog leg and keeping the inbound vessels away from the shoal water; establishing another precautionary area northeast of Port Angeles in the middle of the Strait, centered on the intersection of the three converging TSS lanes, placing a lighted Mo(A) buoy 'V' at the center, and requiring all traffic to flow counterclockwise around the buoy; then removing buoys 'VG', 'VF', and 'PA'.

A third tank vessel master suggests: providing a pilot disembarkation area 1nm north of the present location and improve the outbound traffic land, thus easing the congestion at the current station and reducing the number of meeting and crossing situations.

b. Approach to Port Angeles.

A tank vessel master recommends: moving the Ediz Hook light to the tip of the hook and making it a solid structure with good radar return capabilities; adding to the Ediz Hook light a red sector indicating when a vessel is standing into shoal water; increasing the candlepower of the light, and possibly changing it to a very bright green light so that it can be better seen against the shore lights; as a fail safe measure, mark the northeast edge of the shoal water between Angeles Point and Ediz Hook with a lighted buoy with QR characteristics.

A M/V COHO master suggests increasing the brightness of the Ediz Hook lighted buoy #2, as it is dim from both the north and south approaches.

A tank vessel master commented on the lights of Ediz Hook being difficult to distinguish due to the close proximity to and the amount of background lights.

A container ship master suggests adding a racon to buoy 'PA' as it is often lost visually and on radar if the sea state is choppy.

c. Approach to Rosario Strait. Sector Operators at PSVTS recommended changes in the traffic separation scheme approaches to Rosario Strait to reflect the actual path taken by vessels transiting this area. The change would straighten the approach angle to this critical waterway.

d. Aid Visibility. Several comments were received recommending increasing the intensity of the navigational aids. Comments ranged from stating all the aids should be brighter to listing the individual aids. All the TSS lighted buoys were specifically mentioned, especially buoy 'J'.

e. Traffic Lane Separation BUOY Colors. Two vessels operators stated the yellow buoys are difficult to see. One recommended changing to vertical red/white buoys. The other recommended changing to day-glo green or orange buoys.

f. Racons. Several comments recommending adding racons to various buoys, specifically: on all mid-channel buoys; to each of the important turns; to buoy 'VF' to distinguish it from traffic congestion; to Lawson Reef bell buoy #2 to distinguish it from congregated fishing vessels. Six vessel masters recommended increasing the range of the buoy 'J' racon.

A tank vessel master commented that racons are very useful when attempting to distinguish a buoy in a congested area but makes the aid unusable for checking ECDIS charts. Whereas, stand alone beacons and articulated buoys can be acquired by ARPA and used to align and check radar map overlays and EDCIS type electronic charts.

g. Recommendations to add Aids.

Two tank vessel masters recommended adding a beacon or articulated buoy in the vicinity of Twin Rivers to use as a cross reference, a turning point, and for parallel indexing, as there are no aids or natural targets in the vicinity of the inbound course change in the traffic lane in that area.

A tank vessel master recommends placing lights on Pillar Point and Tongue Point as they are in an area of a major course change as well as where navigators change charts.

Submarine Group Nine also recommends adding an aid in the vicinity of Pillar Point or adding a light on the range at Twin Rivers.

A tank vessel master recommends adding an ISO green light on the tip of Green Point to allow for cross bearing fixes.

A tank vessel operator recommends providing a fixed aid in the vicinity of Hein Bank for reliable radar and visual fixes.

A container ship master recommends adding a buoy, similar to buoy 'J', to the start of the TSS south of Swiftsure Bank at approximately 48° 29.5'N, 124° 59'W.

Submarine Group Nine suggests a non-lateral aid be established in the vicinity of Rocky Point to assist them during personnel transfers.

A Navy yard torpedo test vessel operator suggests adding a buoy to mark Dallas Bank shoal waters. And another such operator suggests adding a light to the green buoy at Partridge Bank.

h. Unnecessary Aids. A comment from the USCGC IRIS suggests the sound signals on Tatoosh LWB, Duntze Rock LWB, and

Slip Point light are unnecessary, and states that if a vessel is close enough to hear one of those signals then the vessel is already too close to the hazard.

i. General Comments.

A container ship master states "keep the pleasure craft out of the traffic lanes" and get dGPS on line.

A fishing vessel operator states that foreign vessel operators must be able to speak and understand English when called on the radio.

j. Political Interest. The interest in preventing oil spills remains high. The project to expand and upgrade VTS is in progress with completion expected later this year.

7. Criticality Determination. The SJDF is classified Militarily, Environmentally, and Navigationally Critical Waterway and should remain classified as such. The volume and make up of vessel traffic is significant, and the waterway contains both U.S. and Canadian waters. The Strait is the only viable route for U.S. Navy vessels to reach the Pacific Ocean from military facilities in the Puget Sound area.

8. Analysis.

a. Minor Aid System.

(1) Intensity of TSS Lighted Buoys. The number and content of the comments received recommending to increase the intensity of the lighted buoys indicate the need to do so.

(2) Color of TSS Buoys. To reiterate the recommendations made in the 1991 SJDF WAMS review, these aids are ineffective due to their poor visual conspicuousness. According to IALA, the buoys do not have to be yellow. As previously suggested, the buoys should be changed to Safewater Marks, which are both appropriate and far more visible than the yellow buoys. In addition the light signals would be brighter (white vs yellow) and more conspicuous (Morse A vs slow flashing).

(3) Racons. As stated in the 1991 SJDF WAMS review, and as remains true, the quality and reliability of our racons in the Strait are weak at best. They need to be updated to the frequency agile type. Also, according to the number of comments received, we need to add racons to assist in navigation of the Strait.

(4) Additional Aids. I concur with the recommendations to add aids to mark the shoal waters surrounding the approach to the Port Angeles pilot station as well as to better mark the 'dog legged' in the TSS near Twin Rivers.

b. Major Aids.

(1) Pilot Station. As the pilot station arrangement apparently remains a concern with deep draft vessels, I recommend a more in-depth study be conducted to determine the feasibility and necessity to change the current arrangement.

c. Electronic Aids. The comments from the 1991 WAMS review are still appropriate.

d. Servicing Units. The units described in the 1988 WAMS analysis are still servicing the same aids except the CGC MARIPOSA replaced the CGC FIR.

e. Horizontal Control. The comments from the 1988 WAMS analysis are still appropriate. The installation of dGPS, to be completed by September 1995, in the Puget Sound area, specifically at Vashon Island and Whidbey Island, will greatly improve the accuracy of navigational fixes for all users.

f. Chart and Publication Alterations/Corrections.

(1) Coast Pilot 7. The new requirements found in 33 CFR 168, as well as the Washington State laws, for tanker escorts must be added. The portion pertaining to the VTS also requires updating to reflect the final rule effective in the Fall of 1994.

9. General Comments.

a. VTS Puget Sound Comments. Comments from Enclosure (8) have been incorporated into many of the before mentioned sections of this WAMS. Scheduled equipment and software upgrades to the existing VTSPS operations will enhance the current system. Many changes have been made to improve communications and surveillance. However, after discussions between the Group WAMS Officer and CO VTSPS, there is concern with the aging AIL Radar Antennas and Processors. As the new system matures (currently scheduled to be operationally accepted sometime in the second quarter of FY96), the program manager needs to program life cycle maintenance for the AIL Radars. It is highly recommended that MLC PAC(t) investigate the problems with hooking up the digital microwave network to Cape Flattery and contract for a commercial microwave installation team to correct current problems with the system.

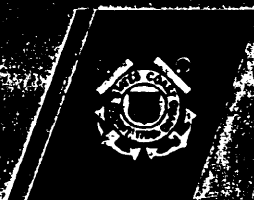
b. USCGC MARIPOSA Comments. They recommend maintaining the buoy system in it's current configuration. However, they have made specific recommendations for Duntze Rock LWB "2D" (LLNR 765/16150, that will be forwarded to CGD13 (oan) under separate cover. See Enclosure (9) for specific problems in maintaining aids for which they are responsible for in the Straits. The Group WAMS Officer discussed with CGC MARIPOSA most of the recommended changes to major aids in the Straits.

10. Enclosures.

- (1) COMDTPUB P16502.6 Light List Vol. VI (SJDF)
- (2) User Mailing List
- (3) Survey Sheet w/Narrative
- (4) 26 User Replies w/Recommendations for Changes
- (5) 28 User Replies w/No Recommendations for Changes
- (6) 4 Requests for Surveys from Published LNM
- (7) Analysis of MSIS Data
- (8) PSVTS ltr 16500 of 1 May 95
- (9) USCGC MARIPOSA ltr 16500 of 21 April 95

U.S. Department
of Transportation

United States
Coast Guard



MASTER

LIGHT LIST

Volume VI

PACIFIC COAST and PACIFIC ISLANDS

This publication contains a list of lights, sound signals, buoys, daybeacons, RACONS and radiobeacons.

IMPORTANT

THIS PUBLICATION SHOULD BE CORRECTED
EACH WEEK FROM THE LOCAL NOTICE TO MARINERS
OR NOTICE TO MARINERS AS APPROPRIATE.

1995

COMDT PUB P16502.6

(1) No.	(2) Name and location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
WASHINGTON - Thirteenth District							
<p style="text-align: center;">N/W APPROACHES TO STRAIT OF JUAN DE FUCA (chart 18480) Quillayute River</p>							
16080 745	JAMES ISLAND LIGHT	47 54.3 124 38.8	Fl W 6 ^s	150	9	White house.	HORN: 2 blasts evf 30 ^s (2 ^s bl-2 ^s si-2 ^s bl-24 ^s si). Operates continuously. Obscured from 068° to 101° and from 111° to 293°.
16085	- Entrance Buoy 2	47 53.7 124 38.8				Red nun.	
16090	- DIRECTION LIGHT	47 54.5 124 38.7	Iso W 6 ^s (R & G Sectors)	15		On pile. On same structure as Quillayute River Entrance Light 3.	White visible 1° each side of centerline of channel bearing 001°. Red visible from 358.5° to 000°. Green visible from 002° to 003.5°.
16095	- ENTRANCE LIGHT 3	47 54.5 124 38.7	Fl G 45	15	4	SG on pile. On same structure as Quillayute River Direction Light.	Obscured on rangeline. Flood lights illuminate entrance channel between James Island and Jetty, and are seasonally maintained from May 1 to Oct. 15 from sunset to midnight. After midnight or between Oct. 15 and May 1 upon request to Coast Guard Station Quillayute River.
16096	- Buoy 5					Green can.	Position shifted with changing conditions. Maintained from May 1 to Oct. 15.
16097	- Buoy 7	47 54.9 124 38.5				Green can.	Position shifted with changing conditions. Maintained from May 1 to Oct. 15.
16100	- Entrance Small Boat Warning Sign		Q Y (2)	34		NW worded ROUGH BAR,	Lights flashing when seas exceed four feet in height, lights extinguished for lesser sea conditions, but with no guarantee that bar is safe
16105	- BOAT BASIN LIGHT 1	47 54.6 124 38.3	Fl G 4 ^s	17	3	SG on dolphin.	
16110	- BOAT BASIN LIGHT 2	47 54.6 124 38.3	Fl R 4 ^s	17	3	TR on dolphin.	
STRAIT OF JUAN DE FUCA ENTRANCE (Chart 18460)							
Strait of Juan De Fuca							
16135 755	- Traffic lane Separation Lighted Buoy J	48 29.2 124 43.6	Fl Y 4 ^s		5	Yellow.	RACON: 0 (---).
16140 770	Carmenah light (C)	48 36.7 124 45.0	Fl W 5 ^s	175	19	White octagonal concrete tower. 56	Emergency light Fl (6) W 15 ^s . DIAPHONE: 3 blasts ev 60 ^s (25 bl-3 ^s si-2 ^s bl-3 ^s si- 2s bl-48s si).
16145 760	Cape Flattery light	48 23.5 124 44.1	Fl W 15 ^s (R sector)	165	W 24 R 20	White conical tower on white sandstone dwelling. 65	Red from 160° to 170°; covers Duncan and Duntze Rocks. Light is obscured from 271° to 007.5°. HORN: 2 blasts ev 60 ^s (3 ^s bl-3 ^s si-3 ^s bl-51 ^s si) Operates continuously. Emergency light Iso W 6 ^s .
16150 765	Duntze Rock Lighted Whistle Buoy 2D	48 25.0 124 45.0	Fl R 45		4	Red.	

(1) No.	(2) Name and location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
WASHINGTON - Thirteenth District							
N/W STRAIT Of JUAN DE FUCA ENTRANCE (Chart 18460)							
Strait of Juan De fuca							
16155	Waadah Island light	48 23.1 124 36.0	Iso W 65 (R sector)	63	W 13 R 11	NR on concrete tower.	Red sector from 093° to 109° ; covers Duncan and Duntze Rocks. HORN: 2 blasts ev 30s (2s bl-2s si-2s bl-24s si). Operates continuously.
16160	NEAH BAY LIGHT		fl R 65	46	7	TR on skeleton tower.	Light obscured from 114° to 196° . HORN: 1 blast ev 30s (35 bl).
16165	Neah Bay Inner Buoy 2	48 22.5 124 36.0				Red nun.	
16170	<i>Dtokoah Point lighted Bell Buoy 1</i>	48 22.6 124 35.3	Fl G 4s		4	Green.	
16175	<i>Port San Juan Lighted Whistle Buoy YK</i>	48 32.1 124 29.0	Mo (A) W			Red and white stripes.	
16180	San Jwn Point light (C)	48 31.9 124 27.4	Fl R 5s	57	12	White circular tower, red band at top, on corner of white building.	HORN: 1 blast ev 30s (35 bl).
16185	Clallam Reef Bell Buoy 1	48 16.1 124 15.5				Green can.	
16190	Slip Point light	48 15.9 124 15.0	A w 5s	55	17	White square tower on pile structure. 50	HORN: 1 blast ev 30s (35 bl). Operates continuously. Emergency Light Iso W 6s .
16195	Shoringham Point Light (C)	48 22.6 123 55.2	Fl G 15s	72	14	White hexagonal tower attached to rectangular dwelling. 64	Emergency light Fl (6) W 15s .
STRAIT Of JUAN DE FUCA (Eastern Part) (Chart 18465)							
Strait of Juan De fuca							
16200	Ideal Cement Range Front Daybeacon	48 10.0 123 57.5				KRW on piles.	Private aid.
16205	Ideal Cement Range Rear Daybeacon 133 yards, 180° from front daybeacon.					KRW on piles.	Private aid.
16210	WHIFFIN SPIT LIGHT (C)	48 21.5 123 42.6	Q W	21	6	White circular tower with green band at top.	HORN: 1 blast ev 30s (3s bl). Operated only on request to Vancouver Coast Guard Radio.
16215	Crescent Bay Bell Buoy 2	48 10.3 123 43.5				Red.	
16221	<i>Race Rocks South Cautionary Lighted Buoy VF</i> (C)	48 14.1 123 31.9	Fl Y 4s			Yellow.	
16222	<i>- Traffic Lane Separation Lighted Buoy PA</i>	48 12.4 123 27.7	fl Y 4s		6	Yellow and black stripes.	
16223	<i>Race Rocks East Cautionary Lighted Buoy VG</i> (C)	48 16.1 123 27.7	fl Y 45			Yellow.	

(1) No.	(2) Name and location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
WASHINGTON - Thirteenth District							
	N/W STRAIT OF JUAN DE FUCA (Eastern Part) (Chart 18465)						
	Strait of Juan De Fuco						
16225	Race Rocks light	48 17.9 FI W 10 ^s (C) 123 31.8		118	18	Alternate black and white bands on circular stone tower, with dwelling attached. 93	Emergency light FI (6) W 15 ^s . HORN: 3 blast ev 60 ^s (2 ^s bl-3 ^s si-2 ^s bl-3 ^s si-2 ^s bl- 48 ^s si). Should not be approached within 1 mile to clear Rosedale Reef.
16226	Race Rocks Radiobeacon	48 17.9 J 12331. 8 (•---)					FREQ: 309 kHz.
16230	WILLIAM HEAD LIGHT	48 20. 6 FI (2) G (C) 123 31.6 0.5 ^s fl 1.0 ^s ec 0.5 ^s fl 4.05 ec		36		White tower; green band at top.	WHISTLE: 1 blast ev 30 ^s (5s bl).
16235	Vic toria Harbor Fairway Lighted Whistle Buoy VH	48 22. 5 Mo (A) W 123 23. 5 (C)				Red and white stripes.	RACON: S (•••).
16240	Albert Head light	48 23. 2 FI W 5 ^s (C) 123 28. 6		90	19	White circular tower.	
16245	Fisgard light	48 25. 8 Iso W 25 (C) 123 26. 8 (R sector)		71	14	White circular tower with red brick dwelling attached Tower illuminated below balcony by floodlights. 48	Red sector from 195° to 332°. To clear Scrogg Rocks, light must show white in approach from eastward.
16250	OGDEN POINT BREAKWATER LIGHT	48 24. 8 Q R (C) 123 23. 6		40		White square tower; red band around bottom. 27	HORN: 1 blast ev 30 ^s (35 bl). Horn points 205°.
16255	SCROGGS ROCKS LIGHT	48 24. 4 FI R 4 ^s (C) 123 26. 3		24		White circular tower; red band at top.	
16260	BROTCHIE LEDGE LIGHT	48 24. 4 F FI G 10 ^s (C) 123 23. 2		20		White circular tower; green band at top.	FG with high intensity green flash ev 10 ^s . HORN: 1 blast ev 20 ^s (2 ^s bl). Horn points southward. Ra ref.
16265	Trial Islands light	48 23. 7 F W (C) 123 18. 2 FI G 5 ^s		93	15	White circular tower. 45	F W with high intensity green flash ev 5 ^s . HORN: 2 blasts ev 60s (35 bl-3 ^s si-3 ^s bl-51 ^s si). Horn points 181° from a white rectangular building close southeastward of lighthouse. Emergency light FI (6) W 15 ^s .
16270 19685	DISCOVERY ISLAND LIGHT	48 25. 5 FI W 5 ^s (C) 123 13. 5		93		White circular tower. 45	Light obscured from 050.5° to 146°. HORN: 1 blast ev 60 ^s (6 ^s bl). Emergency light FI (6) W 15 ^s .
16275	- Calibration Lighted Bell Buoy	48 14. 2 FI Y 6 ^s 123 21. 8			6	Yellow.	
	Ediz Hook						
16280	- light	48 08. 4 FI G (2) W 10 ^s 123 24. 6 0.1s Gfl 2.4s ec 0.1s Wfl 2.4s ec 0.1s Wfl 4.9s ec		50 w	17 G 15	Green square I-beam tower located at NE corner of hanger.	HORN: 1 blast ev 30 ^s (3 ^s bl). Fog signal located 600 yards, 093° from light.
16281	- Radiobeacon	4808. 4 K 123 24. 1 (---)					FREQ: 317 kHz. Antenna 600 yards, 094° from Ediz Hook Light.
16285	- Lighted Buoy 2	48 08. 3 FI R 2.5 ^s 123 24. 0			3	Red.	
16290	Port Angeles Harbor Buoy 1					Green can.	

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WASHINGTON – Thirteenth District							
	N/W STRAIT OF JUAN DE FUCA (Eastern Part) (Chart 18465)						
	Strait of Juan De Fuca						
	coast Guard Mooring						
16291	– BREAKWATER OBSTRUCTION LIGHT	48 08.4 123 24.7	Fl Y 4s	12	4	NY on concrete wall.	
16292	– BASIN LIGHT 1	48 08.4 123 24.8	Fl G 4s	14	4	SG on pier.	
16293	– BASIN LIGHT 2	48 08.4 123 24.8	Fl R 4s	12	4	TR on concrete wall.	
16294	– BASIN LIGHT 3	48 08.4 123 24.9	Fl G 2.5s	14	3	SG on multi-pile.	
16295	– BASIN LIGHT 4	48 08.4 123 24.9	Fl R 2.5s	17	3	TR on pier.	
	Ediz Hook						
16300	– SALMON PEN LIGHT A	48 08.3 123 25.1	Fl Y 6s			On aquaculture facility.	Private aid.
16307	– SALMON PEN LIGHT B	48 08.3 123 25.3	Fl Y 6s			On aquaculture facility.	Private aid.
	Port Angeles						
16310	– PORT DOCK LIGHT	48 07.6 123 26.2	F W	17		On pile.	Private aid.
16315	– <i>Boat Haven Lighted Buoy</i> 3	48 07.7 123 26.9	Fl G 4s		4	Green.	
16320	– MOORING BASIN WEST LIGHT	48 07.6 123 27.1	F R	17		On dolphin.	Private aid.
16325	– MOORING BASIN EAST LIGHT	48 07.6 123 27.1	F G	17		On breakwater.	Private aid.
16330	– BOAT HAVEN LIGHT	48 07.6 123 27.1	Fl W 2.5s	17		On mast.	Private aid.
16335	New Dungeness light	48 10.9 123 06.6	Fl w 5s	67	22	White conical tower on dwelling. 63	HORN: 1 blast ev 30s (3s bl). Emergency light: Iso W 6s.
16340	<i>Rosario Strait Traffic Lane Entrance Lighted Buoy</i> R..	48 16.4 12306.6	fl Y 4s		6	Yellow.	RACON: T (–).
16345	<i>Puget Sound Traffic Lane Entrance Lighted Buoy</i> s	48 12.4 123 06.6	Fl Y 4s		4	Yellow.	RACON: Z (–●●).
16355	<i>New Dungeness Sand Spit Lighted Bell Buoy</i> 2	48 11.5 123 05.7	Fl R 4'		3	Red.	* 15/95
16361	<i>Hein Bank Lighted Isolated Danger Buoy</i> DH	48 21.1 123 02.8	Fl (2) w 5s		6	Black with red band.	
16362	<i>Hein Bank Lighted Buoy</i> 1	48 22.0 123 02.2	Fl G 6s		5	Green.	RACON: K(–●–).
16365	<i>Salmon Bank Lighted Gong Buoy</i> 3	48 25.6 122 58.6	Fl G 4s		4	Green.	
16370	<i>Rosario Strait Traffic Lane Separation Lighted Buoy</i> RA	48 19.8 122 58.6	Fl Y 4s		6	Yellow.	
16375	Smith Island Light	48 19.1 122 50.6	fl w 15s	97	17	45	Emergency light Iso W 6s.

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WASHINGTON - Thirteenth District							
N/W STRAIT OF JUAN DE FUCA (Eastern Part) (Chart 18465)							
Strait of Juon De Fuca							
16380	MINOR ISLAND LIGHT	48 19.5 122 49.2	Fl W 4 ^s	24	5	White cylindrical house on white square house.	
16385	Partridge Bank Buoy 1	48 15.5 122 50.2				Green can.	
16390	Partridge Bank Lighted Bell Buoy 3	48 14.8 122 50.0	Fl G 6 ^s		6	Green.	
16395	Point Partridge Lighted Bell Buoy 5	48 13.2 122 47.0	Fl G 4 ^s		4	Green.	
16400	Point Partridge light	48 13.5 122 46.2	Fl W 5 ^s	105	18	NB on skeleton tower.	HORN: 1 blast ev 30s (3 ^s bl). Lighted throughout 24 hours.
16405	Puget Sound Traffic Lane Separation Lighted Buoy SA		Fl Y 4 ^s		4	Yellow.	RACON: M (---).
APPROACHES TO ADMIRALTY INLET (Chart 18471)							
Sequim Bay							
16416	Entrance Lighted Buoy 2	48 05.1 123 01.7	Fl R 45		5	Red.	
16420	Entrance Buoy 4					Red nun.	
16425	Buoy 5	48 04.6 123 02.6				Green can.	
16430	Buoy 7	48 04.5 123 02.6				Green can.	
16435	Buoy 9					Green can.	
16440	Buoy 10					Red nun.	
16445	JOHN WAYNE MARINA LIGHT 2	48 03.9 123 02.3	Fl R 2.5 ^s	21		On north breakwater.	Private aid.
16450	JOHN WAYNE MARINA LIGHT 3	48 03.8 123 02.3	Fl G 2.5 ^s	13		On south breakwater.	Private aid.
Strait of Jwn De Fuca							
16460	Protection Island Southwest Spit Buoy 1	48 06.9 122 57.9				Green can.	
16465	McCurdy Point Buoy 4	48 08.7 122 50.7				Red nun.	
16470	Point Wilson Lighted Buoy 6	48 09.1 122 45.9	Fl R 4 ^s		4	Red.	
ADMIRALTY INLET AND PUGET SOUND TO SEATTLE (chart 18441)							
Admiralty Inlet							
16475	Point Wilson light	48 08.6 122 45.3	Occ W & Fl R 20 ^s 15 ^s W fl 2.4 ^s ec 0.2 ^s R fl 2.4 ^s ec	51	W 16 R 15	White octagonal tower on fog signal building.	HORN: 1 blast ev 30 ^s (3 ^s bl). Emergency light Iso W 6 ^s .
16480	KEYSTONE HARBOR ENTRANCE LIGHT 1	48 09.4 122 40.3	Q G	12		On piling.	Private aid.
16485	KEYSTONE HARBOR ENTRANCE LIGHT 2	48 09.4 122 40.3	Fl R 4 ^s	13	5	TR on platform.	
16487	ADMIRALTY BAY OPERATING AREA NORTH LIGHT	48 09.8 122 38.2	Fl Y 5 ^s	10		On gray concrete structure.	Shows Fl Y 5 ^s light when Navy operations are in progress. U.S. Navy maintained.

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U.S. Coast Guard Group Port Angeles

Straits of Juan de Fuca
Waterways Analysis Questionnaire 1995

Name : _____
Address: _____

Phone: (_____) _____
Vessel: _____ O.N. or State No.: _____
Type: _____ GT: _____ NT: _____
Length: _____ ft. Draft: _____ ft.
Activity: _____ Pleasure _____ Commercial _____ Commercial & Pleasure
Commercial Vessel Engaged in: _____

Frequency transitted: _____ times per month May through Sep
_____, _____ times per month Oct through Apr

Time of Transit: _____ Day Only; _____ Night Only; _____ Day and Night

*Please **answer** the following questions as thoroughly **as** possible. Feel free to use additional sheets of paper, if needed.***

1. In your opinion, are the aids to navigation adequate? If not, where and why?

2. Are any lighted aids too dim or bright? Please be specific.

3. Are any aids unnecessary? If so, where and why?

4. Are you aware of any problems with the present system or have recommendations for improvement (e.g. light unlit aids, relocate aids, etc)?

5. Do you have ANY suggestions for improvements on this **waterway**?

Please return the completed questionnaire to: Commander
U.S. Coast Guard
Group Port Angeles
Port Angeles, WA 98362-0159

ENCLOSURE (3)

The Coast Guard is conducting an analysis of the Straits of Juan de Fuca (light list number 16135, the Traffic Lane Separation lighted buoy "J" at the western entrance, through 16405, the Traffic Lane Separation lighted buoy "SA" at the northern Puget Sound entrance) to evaluate the adequacy of the aids to navigation. Users of this waterway are invited to comment on the current system. Additionally, if you would like to participate in a survey being conducted on this waterway, send a request for the survey, including your name, address and number of survey copies you wish to receive. All comments and surveys should be received by 30 April 1995, at Commander, USCG Group Port Angeles, Port Angeles, WA 98362-0159, Attn: LCDR Demetriff.

SJDF 95 WAMS REPLIES TO SURVEY SUMMARY

A. Comments on Aid Visibility:

1. Duntze Light is too dim. (Navy Torpedo Tender)
2. Buoy 'J' intensity and/or the racon range should be increased. (Six recommendations: 3 Tank Vessel masters, 2 Container Ship masters, and 1 oil recovery vessel operator.)
3. All the aids should be brighter. (1 Fishing vessel operator, 1 recovery vessel operator.)
4. Buoys 'VF', 'PA', 'C', and 'CA' should be brighter. (1 Tank Vessel master)
5. Buoy 'R' should be brighter. (1 Tank Vessel master)
6. The yellow traffic lane separation buoys are difficult to see:
 - a. 1 small passenger vessel operator recommends using vertical red/white buoys.
 - b. 1 WA State Ferry master suggests using day-glo green or orange buoys.
7. The traffic lane separation buoys are too dim:
 - a. 1 small passenger vessel operator states the Mo(A) is too dim.
 - b. 1 WA State Ferry master states especially buoys 'TC' through 'S' are too dim.

B. Recommendations to add Aids:

1. Add a beacon or articulated buoy at 48°11' N, 123°57' W for parallel indexing inbound, as there is no aid or natural target in the vicinity of the inbound course change in the traffic lane near Twin Rivers. (1 Tank Vessel master)
2. Add a buoy to mark Dallas Bank shoal waters. (Navy yard torpedo test vessel)
3. Add racon to more of the important turns. Appreciates those recently added. (1 Container Ship master)
4. Add racon to 'VF' buoy. (1 Tank Vessel master)
5. Add a white light with a red sector showing at approximately 180° on the north tip of West Twin River giving vessels another light in that area to use as a cross bearing reference and as a turning point. (1 Tank Vessel master)
6. Add a ISO green light, with the same brightness of Sheringham Point light, on the tip of Green Point to allow for fixes from cross bearings. (1 Tank Vessel master)
7. Add a light on Pillar Point and Tongue Point as they are in an area of a major course change as well as where navigators change charts. (1 Tank Vessel master)
8. Add a racon on buoy 'VF' to distinguish it from congested traffic and to be better able to find it in restricted visibility. (1 Tank Vessel master)
9. Provide a fixed aid in the vicinity of Hein Bank for reliable radar and visual fixes. (1 Tank Vessel master)
10. Add racons on all mid-channel buoys. (1 Container Ship master)

SJDF 95 WAMS REPLIES TO SURVEY SUMMARY

11. Add a buoy, similar to buoy 'J', to the start of the TSS south of Swiftsure Bank at approximately 480 **29.5°N, 124° 59'W**. (1 Container Ship master)
12. Add a racon to Lawson Reef bell buoy #2 or make it a fixed lighted buoy similar to Davidson Rock light in order to distinguish it from fishing vessels congregated near it. (1 Tank Vessel master)
13. Add a light to the green buoy at Partridge Bank. (Navy yard torpedo test vessel)

C. Recommendations/Comments on the Approach to the Port Angeles Pilot Station:

1. Tank Vessel master:

- a. Make Ediz Hook buoy #2 articulated.
- b. Move the Ediz Hook light to the end of the spit, preferably making it a stand alone beacon.
- c. Mark the 5 fathom shoal line at approximately **48° 9.8'N, 123° 28.2'W**.
- d. VTS should actively manage the traffic by keeping a 2 to 3 mile window between vessels arriving at or departing from the pilot station.
- e. Establish a "No Fishing" zone in the pilot station area.
- f. Move the pilot pickup point to approximately 2nm northeast of the spit to assist in alleviating traffic congestion. Adjust the traffic lanes accordingly.
- g. Add a buoy at approximately **48° 8.1' N, 123° 20.3'W** to mark the 5 fathom curve north of Morse Creek to help in monitoring the vessel's position on the west bound course toward the pilot station.

2. Tank Vessel master:

- a. Space the vessels approaching and leaving the pilot station.
- b. Rearrange the traffic scheme at the pilot station by:
 - (1). Establishing a 1 nm radius Precautionary Area 1 nm northeast of the tip of Ediz Hook to be the pilot boarding area.
 - (2). In the center of this Precautionary Area, place a lighted **Mo(A)** buoy with racon (•—•), papa, for Pilot.
 - (3). Establish regulations dictating all eastbound vessels pass south of the buoy and all westbound traffic pass north.
 - (4). Slightly change the TSS coming from buoy 'PA', removing the inbound dog leg and keeping inbound vessels away from the shoal water.
 - (5). Establish another Precautionary Area centered on the intersection of the three converging TSS lanes. Place a lighted buoy 'V' with **Mo(A)** characteristics at its center. Regulate all traffic to flow counterclockwise around the buoy 'V'. Remove buoys 'VG', 'VF', and 'PA'.

SJDF 95 WAMS REPLIES TO SURVEY SUMMARY

3. Tank Vessel master:

- (a) Provide a pilot disembarkation area 1 nm north of the present location and improve the outbound traffic lane. This will ease the congestion at the current pilot station and reduce the number of meeting and crossing situations.

D. Recommendations/Comments on the Approach to the Port Angeles:

1. Tank Vessel master:

- (a) Move the Ediz Hook light to the tip of the hook making it a solid structure with good radar return capabilities,
- (b) Add to the Ediz Hook light, a red sector from approximately 120° to 080° to indicate when a vessel is standing into shoal water. Leave the rest of the light as is, or change it to a very bright green light, like the Sheringham Point light, that would be seen better against the shore lights. In any case, INCREASE the light's candlepower.
- (c) As a fail safe measure, place a lighted buoy with QR characteristics at $48^{\circ} 9.8'N, 123^{\circ} 28.2'W$ to mark the northeast edge of the shoal water between Angeles Point and Ediz Hook.
- (d) Place a lighted buoy with QR characteristics north of Morse Creek at approximately $48^{\circ} 8'N, 123^{\circ} 21.3'W$ marking the 10 fathom curve to warn vessels they are setting toward the grounding line.

2. COHO (car/foot-passenger ferry) master:

- (a) Increase the brightness of the Ediz Hook lighted buoy #2 as it is dim from both the north and south approaches.

3. Tank Vessel master:

- (a) The lights of Ediz Hook are difficult to distinguish due to the close proximity to and the amount of background lights.

4. Container Ship master:

- (a) Add racon to buoy 'PA' as it is often lost visually and on radar if the sea state is choppy.

E. Unnecessary Aids:

1. USCGC IRIS:

- (a) The sound signals on Tatoosh LWB, Duntze Rock LWB, and Slip Point light. If a vessel is close enough to hear them, they are already too close.

F. General Comments:

1. RO/RO Container Ship master:

- (a) Keep the pleasure craft out of the traffic lanes.

SJDF 95 WAMS REPLIES TO SURVEY SUMMARY

(b) Get DGPS on line.

2. Fishing Vessel operator:

(a) Foreign vessel operators must be able to speak and understand English when we call them on the radio.

3. U.S. Navy torpedo tender:

(a) The traffic information received by marine radio is accurate, timely and professionally given.

4. Car Carrier master:

(a) The buoy 'J' racon is generally visible at 1 Onm.

5. Tank Vessel master:

(a) Tatoosh light and Waadah Island light are bright and easy to spot and to take bearings on.

(b) Suggests the U.S. use the same color lights as Canada uses on Sheringham Point and San Juan Point lights.

6. Tank Vessel master:

(a) Aids which are distinct radar targets are particularly useful since most position keeping in the traffic lanes is monitored by parallel indexing.

(b) Stand alone beacons and articulated buoys can be acquired by ARPA and used to align and check radar map overlays and ECDIS type electronic charts.

(c) **Racon**s are very useful when attempting to distinguish a buoy in a congested area (like an area with a high fishing vessel density) but makes the aid unusable for checking ECDIS charts.

STRAITS OF JUAN DE FUCA WATERWAYS ANALYSIS QUESTIONNAIRE
1995

Craig Dalton
11 Elm St.
Kingston, Mass.
02364-1 905

Vessel: S/R San Francisco Official # 523626
Type: Steam Tanker Gross Tons 34,266 Net Tons 28,547
Activity: Transporting oil, ANS trade, Valdez to NW Washington state
Frequency transited: 2-3 times/month May-Sept.
 2-3 times/month Oct-Apr.
Time of Transit Day and Night

1. *In your opinion, are the aids to navigation adequate? If not, where and why?*
Aids are presently adequate, but could be improved. If suggestions not followed, would recommend **Racon** on the 'VF' buoy. See suggestions.
2. *Are any lighted aids too dim or bright? If so, where and why?*
J buoy at the western entrance to the Straits, and buoy 'R' should be brighter. The buoys are hard to visually spot until 6-7 miles away.
3. *Are any aids unnecessary? If so, where and why?*
Yes, VF, VG, PA buoys, if suggestion is followed.
4. *Are you aware of any problems with the present system or have recommendations for improvement. (eg.. . light *inlit* aids, relocate aids, etc.)*
Yes, to enhance the waterway, several new lights should be installed. To make the area around Port Angeles safer, several suggestions follow.
5. *Do you have "ANY" suggestions for improvements to this **waterway**?*
Yes.

First, a comment, Tatoosh light is a nice bright light, which slowly rotates, making it easy to spot and take bearings on. Waadah Island Lt is a nice bright **Iso** light which is also easy to spot and take bearings on. So much for the good news.

Traveling eastward from sea, along the way we see San Juan Point light and Sheringham Point lights on the Canadian shore. These lights are excellent in visibility and their color precludes misidentification. The U.S. should have some of these colored lights.

A. Install a white light with RED SECTOR on the northern tip of West Twin River. The red sector would show, at a bearing of about 180 degrees. This would give the mariner another light in that area for cross bearings, and it could also be used as a turning light. When the red sector was entered, it would indicate that you should have already made your turn to the 090 course.

B. Move Port Angeles Light to the tip of Ediz Hook, and make it a solid structure with good radar return capabilities. The light needs more power to show itself against the city's shorelights. Also, a RED SECTOR should be added (See Chartlet) from around 120 degrees to 080 degrees. To a deep draft vessel, seeing this red sector would indicate that it is standing into shoal water. The non-red sector of the light could remain as is, **W,W,G**, if the candlepower is increased. However, another color may be more beneficial. A very bright Green light, such as Sheringham Light, would stand a much better chance of being spotted against the yellow and white lights of the shore.

C. Establish lighted buoy with QR characteristics around L 48-09.8 N and Long. 123-28.2 W, (See Chartlet). This would mark the northeasternmost limit of the shoal that is between Angeles Point and Ediz Hook. This would be a fail safe measure over the red sector on Port Angeles Light.

D. Establish lighted buoy with QR characteristics north of Morse Creek around L 48-08.0 N Long 123-21.3 W. This would mark edge of 10 fathom curve, for deep draft vessels dropping off pilot and entering or leaving Port Angeles Harbor. Many times presently, pilots like to leave the Romeo buoy and head for Morse Creek and then turn due west to head for the tip of Ediz Hook. This puts them close to the grounding line. This buoy would warn them if they started setting toward this line.

E. Establish an **ISO** Green light (The brightness of Sheringham Point Lt) on the tip of Green Point. This will aide in getting fixes from cross bearings with Dungeness Point Light, and radar fixes using a visual bearing from this light. There is no other really distinguishable light between the Romeo Buoy and Ediz Hook, for establishing your position.

F. Now for the major items. As has been said before, embarking and disembarking pilots off Ediz Hook is unnecessarily nerve wracking and dangerous. Deep draft ships are forced close to the point, sometimes with a current setting them into shoal water, and meeting inbound or outbound vessels at the same time. Ships must come in too close to the grounding lines, and ships must meet other ships bound in the opposite direction under haphazard conditions. The pilots do not try to space the vessels, nor does VTS. This would help a lot. What I see as one way to achieve greater safety off Ediz Hook is to re-arrange the traffic scheme to match the enclosed chartlet.

F(1) First, a Precautionary Area with a one mile radius would be established one mile NE of the tip of Ediz Hook. This would be the pilot boarding area. In the center of this circle would be established a lighted buoy (**Mo(A)**) suggested, with **Racon** (.-.) (P) Suggested (For Pilot). Regulations would require all Eastbound vessels to pass south of the buoy, and all Westbound vessels to pass north of the buoy. (Similar to the sea buoys at Los Angeles and Long Beach)

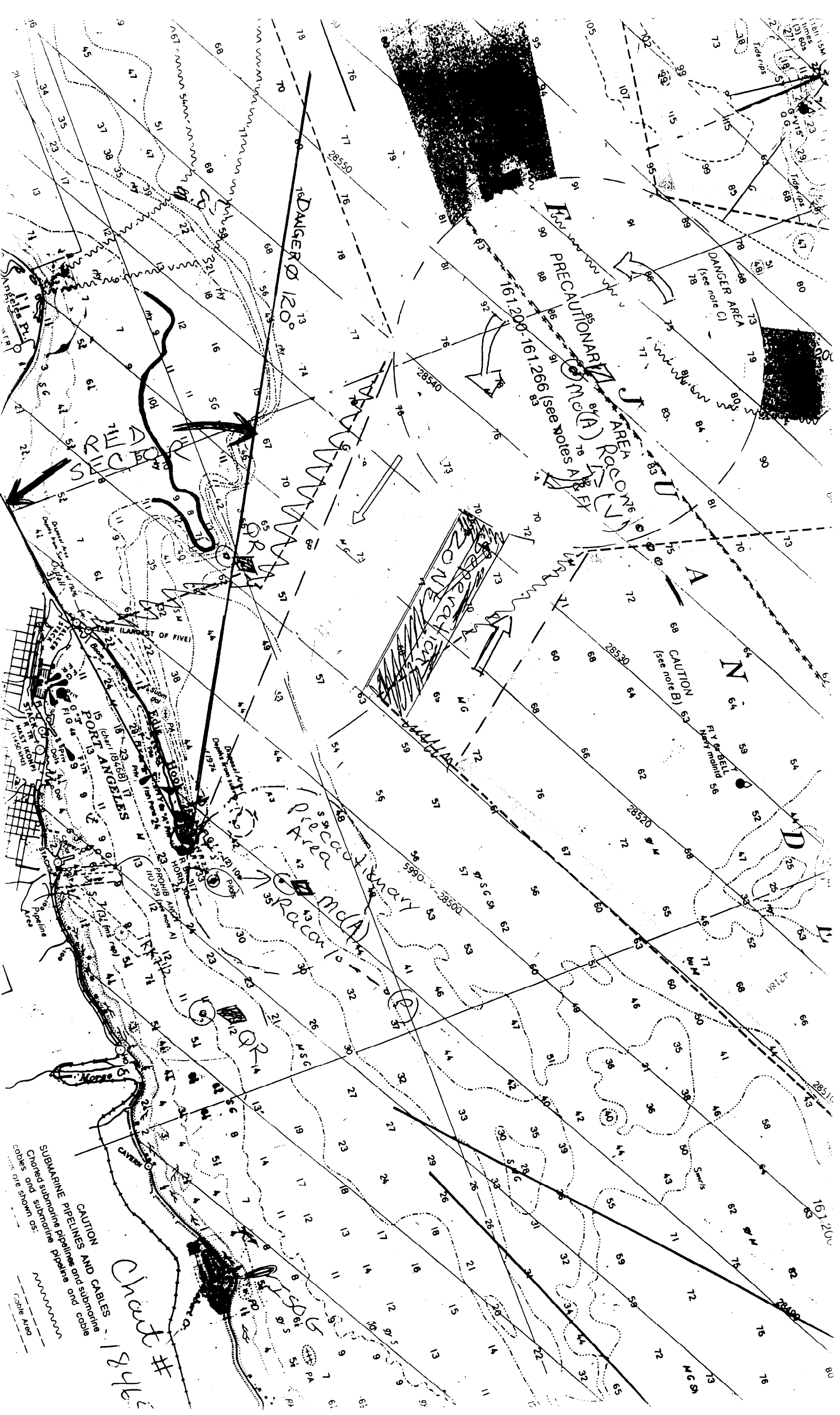
F(2) This would be in conjunction with slightly changing the traffic lane and separation zone coming from the 'PA' buoy, as per the chartlet. This change, in conjunction with the new Precautionary Area, will improve the area's safety immensely. As can be seen from the chartlet, traffic inbound from sea would now have a straight shot at the pilot station. There is no longer any dog leg necessary to pick up the pilot. The separation zone keeps the inbound ships out of the shoal water north of Ediz Hook. Inbound ships will always meet outbound ships port to port as they round the 'P' buoy. Tugs, tows and Naval vessels leaving from Seattle, can pass North of the Precautionary Area and not interfere with the ships picking up or dropping their pilots at the station. Outbound ships after dropping off their pilots could still use Race Rocks Light as a leading light, going out the TSS. Keep in mind, this vastly improved safety could be accomplished by only establishing one new buoy, the 'P' buoy, and putting out a Notice To Mariner's Correction establishing new separation zone and lanes to Port Angeles. Of course pilot cooperation is necessary too.

F(3) My other suggestion is also shown on the attached chartlet. Establish a circular Precautionary Area centered on the intersection of the three TSS lanes. Establish a lighted buoy 'V' at its center, with **Mo(A)** characteristics. Regulate all traffic to flow counter-clockwise around buoy 'V'. Remove the three buoys 'VG', 'VF', and 'PA'. This might improve some of the crossing situations that occur as ships outbound to sea from Port Angeles, encounter inbound ships for Victoria, etc. The central buoy would separate the traffic, and reduce chances of conflicting courses. It would also provide a point where ships could be sure that "the other guy" is going to turn once past this buoy. Now, no one knows where the other is going to turn. This improvement would remove three existing buoys and establish one new.

I hope these suggestions have been of help.

Sincerely,

Craig Dalton



U.S. Coast Guard Group Port Angeles

Straits of Juan de Fuca
Waterways Analysis Questionnaire 1995

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101 STEWART ST #900
SEATTLE, WA 98101 Phone: (206) 232-9283
Vessel: FREIGHTERS, TANKERS, CONTAINER SHIPS O.N. or State No.: _____
Type: _____ GT: >25000 to NT: _____
Length: 500 - 1000 ft. Draft: 20' to 55' ft. 120,000
Activity: _____ Pleasure ☒ Commercial _____ Commercial & Pleasure

Commercial Vessel Engaged in: _____

Frequency transitted: _____ times per month May through Sep

_____ times per month Oct through Apr

Time of Transit: _____ Day Only; _____ Night Only; ☒ Day and Night

Please answer the following questions as thoroughly as possible. Feel free to use additional sheets of paper, if needed.

1. In your opinion, are the aids to navigation adequate? If not, where and why?

Yes

2. Are any lighted aids too dim or bright? Please be specific.

NO

3. Are any aids unnecessary? If so, where and why?

NO

4. Are you aware of any problems with the present system or have recommendations for improvement (e.g. light unlit aids, relocate aids, etc)?

NO

5. Do you have ANY suggestions for improvements on this waterway?

NOT AT PRESENT

Please return the completed questionnaire to: LCDR G. Demetriff
U.S. Coast Guard
Group Port Angeles
Port Angeles, WA 98362-0159

NOTE: I surveyed our membership
AND received NO INPUT REGARDING CHANGES,
DEFICIENCIES OR IMPROVEMENTS.

Pat Hannigan